

Title (en)

TURBOMACHINE CHEMICAL REACTOR AND METHOD FOR CRACKING HYDROCARBONS

Title (de)

CHEMISCHER TURBOMASCHINE REAKTOR UND VERFAHREN ZUM SPALTEN VON KOHLENWASSERSTOFFEN

Title (fr)

RÉACTEUR CHIMIQUE DE TYPE TURBOMACHINE ET PROCÉDÉ DE CRAQUAGE D'HYDROCARBURES

Publication

EP 3768801 B1 20231004 (EN)

Application

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Priority

US 2018032955 W 20180516

Abstract (en)

[origin: WO2019221726A1] Chemical reactors (10) and methods crack hydrocarbons in process fluids by accelerating the process fluid to a velocity greater than Mach 1 with an axial impulse impeller (40) and generating a shock wave (90) in the process fluid by decelerating it in a static diffuser (70) having diverging diffuser passages (72). Temperature increase of the process fluid downstream of the shockwave cracks the entrained hydrocarbons in a single pass, through a unidirectional flow path (F), within a single stage, without recirculating the process fluid for another pass through the same stage. In some embodiments, the turbomachine chemical reactor (110) has multiple successive stages of one or more axial impulse impellers (40A, 40B), paired with a diverging passage, static diffuser (70). Successive stages crack additional hydrocarbons by successively raising temperature of the flowing process fluid.

IPC 8 full level

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